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MONTHLY REPORT

ON

THE PROGRESS OF THERAPEUTICS.

Edited for the Edinburgh Medical Journal.

No. XVII.—February 1876.

BY

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Licentiate of the Royal College of Surgeons of Edinburgh; Lecturer on Medical Chemistry in the Ledwich School of Medicine, Dublin; Corresponding Member of the Therapeutical Society of Paris; Hon. Member of the Ontario and Chicago Colleges of Pharmacy, etc.; Librarian to the Royal College of Surgeons in Ireland.

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MONTHLY

REPORT ON THE PROGRESS OF THERAPEUTICS.

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From the Edinburgh Medical Journal for February 1876.

The Physiological Action of Arsenic.—According to Kossel and Gähtgens, the action of arsenic may be regarded as analogous in several respects to that of phosphorus. Poisoning by the latter agent is characterized by the deposition of fat in the various organs, an effect which is also produced by arsenic and antimony. From the experiments performed it would appear that the nitrogenous constituents of the cells undergo disintegration, and that the nitrogen is eliminated in the form of urea.—*Centralblatt für die Med. Wiss.*, No. 32, 1875.

The Action of Alcohol.—In the *Giornale Veneto delle Scienze Mediche* for March 1875, is a summary of the observations of Drs Felice Lussana and Pietro Albertoni on the action of alcohol. These authors point out how, among the phenomena of acute alcoholism, disturbance of the intellect prevails in man, while in dogs, and still more in birds, the phenomena of muscular disturbance are most prominent. This is compared with the anatomical fact, that in man the development of the nervous centres of intellect surpasses that of the motor centres, while the reverse is the case with dogs and birds. The authors conclude that the action of alcohol on the nervous system is in proportion to the relative development of the nervous centres. And this would appear to be in conformity with the general principle, that the action of the drug on various animals is in direct relation to the greater or less development of the organs on which it specially exerts its influence. It may hence be argued that a substance will act in a smaller dose in proportion to the perfection of the organ on which it exerts its elective action.

With regard to the absorption of alcohol, it appears from the authors' experiments that this is subordinate to its degree of con-

centration. If this be great, alcohol exerts a strong local irritant action, but a feeble general action; inasmuch as the part congested, deprived of its normal conditions, has its capability for ready and complete absorption impaired. The authors prove that, besides being absorbed by the stomach, especially by the veins, alcohol is also absorbed by the large and small intestines, but in smaller proportions. When mixed with water in the proportion of 12 per cent., alcohol produces local effects in the rectum, while it does not affect the stomach when taken in the proportion of 20 per cent. When sufficiently diluted, alcohol is absorbed hypodermically more readily, and with greater effect, than when given by the mouth. It is absorbed by the serous membranes; and still more readily, when properly diluted, by the air-passages. They found that alcohol is exhaled in extremely minute quantities by the lungs. The smallest amount of elimination perhaps takes place through the skin; but probably other products of its transformation, as acetic acid, are eliminated by this channel. They found alcohol in the urine when collected *for several consecutive days*, but in small quantities. It was found that alcohol did not pass off with the bile; thus showing the groundlessness of the hypothesis that alcohol is capable of dissolving biliary calculi. According to Schulinus and others, much unchanged alcohol is found in the blood and in the organs four hours after its absorption, and the conclusion is that the greater part of the alcohol undergoes transformation within the organism.

The authors regard as exaggerated the opinions of those who consider that alcohol produces much change in the plasma or on the corpuscles of the blood. They consider from their experiments, that even when marked cerebral phenomena of alcoholism have appeared, sensation is often fairly well preserved. They affirm that alcohol gives rise to dilatation of the capillaries, and to increase in the energy of the cardiac contractions. They conclude from numerous experiments that, in a healthy man, alcohol in a physiological dose does not produce a *constant* modification of the heat-making process. In animals (dogs, guinea-pigs, birds) alcohol always lowers the temperature.

As a nervine, alcohol is very powerful, and excites the muscular nerves; and by its physical and chemical properties it limits the process of organic decomposition just as it does outside the organism.

It is shown to be probable that in one of the phases of its transformation alcohol may furnish acetic acid, but they do not believe that oxalic and formic acids are products of its oxidation on the system. The authors regard as probable the partial transformation of alcohol into aldehyde—a view which was supported by Duchek, but opposed by Lallemand, Perin, and Duroy. The results of certain experiments lead to the suspicion that the liver is the seat of the transformation of alcohol into aldehyde.

In the production of mechanical force, alcohol, besides its calori-

facient properties, has a great superiority over similar aliments. With a smaller amount of combustible matter, and in less time, it produces more force. Alcohol acts, not only as a thermo-dynamogenous aliment, but also as a nervine aliment, so far as it remains unchanged. Alcohol does not furnish material for the nutrition and repair of tissues. Hence, without a proper supply of nitrogenous food, the muscles and the heart undergo degeneration, and herein lies the explanation of the good and the bad effects attributed to alcohol.

Heubach has recently confirmed the opinion that, in febrile affections, but little, if any, of the alcohol administered reappears in the urine; and Schmidt (*Centralblatt für Chirurgie*, No. 23, 1875) has endeavoured to find how much of the spirit is contained in the expired air. In no case could evidence of more than a trace of alcohol be obtained.

In the *Lancet*, 31st July 1875, is an interesting paper by Staff-Surgeon Mulvany on alcohol as a generant of thermo-electric currents in the system.

Schwalbe, of Weinheim, has recently used injections of simple alcohol in various forms of indolent glandular swellings with very favourable results. He considers that it establishes a state of chronic inflammation in the connective tissue, causing it to contract, and thus subjecting the vessels to pressure, and effecting the obliteration of the lymphatics. He reports the cure of fatty tumours by the use of such injections, to which ether was added to dissolve the fat. He finds the most important application of his plan in the treatment of cancer, by preventing its extension to the neighbouring tissues and lymphatic glands. The tumour is first to be isolated, as it were, by causing the connective tissue on all sides of it to become shrivelled. Then the contracted connective tissue approaching the growth itself presses on it, cuts off its blood supply, and so causes it to disappear by atrophy. Schwalbe, with Dr Hasse, claims to have cured three cases of cancer of the breast in this way. —*New Remedies*, July 1875.

In the *Philadelphia Medical Times*, 10th April 1875, Dr J. C. Morris gives the following rules for the administration of alcohol, except in cases of shock or hæmorrhage :—1. It should be given in small definite quantities, at intervals of three or four hours generally, so as to produce repeatedly the primary effects, and avoid the second and third stage of its action. 2. It should always, if possible, be accompanied by food. 3. It should be gradually, but steadily, withdrawn as the patient regains strength, and no patient should be left to the continued use of it after recovery.

The Physiological Action of Aldehyde.—Drs Albertoni and Lussana of Padua, to whose researches on alcohol we have already alluded in this report, have also studied the action of aldehyde. This substance agrees in its elementary properties with those of alcohol. It coagulates albuminous substances, and is a solvent of

all such substances as are soluble in alcohol. It possesses powerful antiputrescent properties. Its physiological action on animals is very powerful. From three to five grammes, diluted in water, and injected into the veins of a dog, almost immediately arrest the respiration, and produce a condition of coma. The heart's action is only slightly weakened, but the muscles are paralyzed, and sensation and reflex excitability are destroyed temporarily. The animals, however, usually recover in a short while. In small doses, aldehyde produces intoxication similar to that of alcohol, but sensation is completely lost. When given by the stomach, it produces intense irritation of that organ, and gives rise to gangrene of the mucous coat, owing to its caustic properties. Large quantities of it can be inhaled through the lungs. Small quantities of it accelerate the respiration, but large ones arrest it completely, but scarcely affect the cardiac contractions. During the stage of asphyxia, irritation of the pneumogastrics exerts no influence on the heart; but when the breathing recommences, those nerves recover their irritability. Aldehyde diminishes the temperature of the body in proportion to the dose given. The vessels of the brain, observed through an opening made in the skull, are dilated at the beginning of inhalation of aldehyde, but they contract when the animal becomes narcotized. The property which aldehyde possesses of arresting the respiration, and its irritating action, will probably prevent its employment as an anæsthetic in surgical operations.

Solution of Alkaloids in Oil.—In a note in the *Pharmaceutical Journal*, 11th Sept., Mr J. B. Barnes suggests the use of glacial acetic acid as a means of preparing solutions of alkaloids in oil when required for liniments. These solutions may be made of any desired strength, and do not lose their transparency when mixed with chloroform and camphor.

Aloes.—The following conclusions are deducible from Dr Craig's experiments:—1. Aloin may, by exposure to the air, undergo considerable chemical change without losing its physiological action as an active aperient. 2. The *resin* of aloes, when thoroughly exhausted of aloin, possesses no purgative properties, and therefore cannot be the active principle of aloes. 3. The resin of aloes is not the cause of the griping which sometimes follows the administration of the drug. 4. Aloin is an active aperient, and is, in all likelihood, the active principle of aloes.—*Pharmaceutical Journal*, 7th April, and *Edinburgh Medical Journal*, June.

Carbazotate of Ammonia as a Substitute for Quinine.—Dr Slane of Goalpara finds carbazotate of ammonia to be a very efficient remedy in the treatment of ague. It does not increase the appetite, but like quinine, after a few doses, it produces tinnitus aurium, and slight deafness. The urine becomes tinged of a deep orange colour, and occasionally the skin and conjunctiva acquire a jaundiced hue, but the discoloration soon disappears. It may be

given in pill, with extract of gentian, and combination with a quarter of a grain of extract of nux vomica seems to increase its efficacy. Being perfectly soluble in water, it may be given in solution, but it has an intensely bitter taste. The largest quantity Dr Slane ever gave was 8 grains in the twelve hours.—*Indian Med. Gazette*, 1st April.

Bromide of Ammonium.—Dr J. M. Da Costa concludes, from his experience of this agent in rheumatism, that it relieves the pain of this affection, that it acts generally upon the skin, keeps up the action of the kidneys, and lessens the tendency to internal inflammation. It does not give rise to the pallor and anæmia, general distress, and alteration of blood and tissues, which a prolonged alkaline treatment will cause. He associates with it acetate of potash when the influence of a more active diuretic is indicated. When the acute symptoms subside, he follows it up by the administration of quinine, which has, he believes, the power to lessen the tendency to relapses.—*Medico-Pharmaceutical Abstract and Review*, 1st September.

Chloride of Ammonium in Neuralgia.—In the *Practitioner* for December, Dr David Young of Florence relates two cases of neuralgia—one of the right ovary, and the other of the fifth pair—which present several points of interest, and illustrate the value of this salt in the treatment of these affections. He points out that the chloride of ammonium, if given in larger doses than fifteen grains, is apt to cause nausea, and in some cases diarrhœa; and, moreover, if administered at distant intervals—say of three or four hours—the effect is much less marked than when given rapidly, and in anticipation of the onset.

The Influence of Nitrite of Amyl in counteracting the Dangerous Effects of Chloroform.—Mr C. Bader states (*Lancet*, 8th May) that in three or four seconds after taking three drops of nitrite of amyl on sugar, the bloodvessels of the retina (chiefly the veins) become enormously dilated and gorged with blood, leaving no doubt as to simultaneously existing cerebral hyperæmia, with accelerated circulation of blood. After observing upon himself the effects of inhalation of vapour of nitrite of amyl, Mr Bader conceived that in cases of faintness, or of defective breathing, or defect of the heart's action, while under the influence of an anæsthetic, inhalation of the vapour of this drug might be of use. Mr Bader publishes several cases illustrative of the value of his suggestion. So long ago as 11th June 1870, Dr F. A. Bunall, in the *New York Medical Gazette*, recommended the use of nitrite of amyl in chloroform poisoning.

Nitrite of Amyl in Nervous Cephalalgia.—Dr R. A. Douglas-Lithgow states that in this affection he has never known the inhalation of nitrite of amyl to fail to produce entire and almost immediate relief. He places two drops on the palm of the patient's hand, and, quickly diffusing these with his finger over the palmar

surface, he tells her to cover her mouth and nose with her hand, and to inspire deeply and quietly. The patient should be seated while inhaling. In several instances he has had to increase or repeat the dose, but, as a rule, two drops have been sufficient. Should any untoward symptoms occur, cold affusion to head, face, and chest, with a free supply of air, should be resorted to; but he has never had occasion to adopt these measures, and, used as he recommends, Dr Douglas-Lithgow does not think there is the slightest risk in its administration.—*Lancet,* 16th October.

Nitrite of Amyl in Facial Neuralgia.—Dr George H. Evans, in the *Practitioner* for September, relates several cases illustrative of the efficacy of inhalation of the vapour of nitrite of amyl in those cases of facial neuralgia, which are obviously connected with, if not dependent on, anæmia.

Nitrite of Amyl in Sea-Sickness.—In the *Lancet* for 21st August, is a brief paper on this subject by Dr Crochley Clapham. He tried the remedy altogether in 124 cases, and of these, 121 proved eminently satisfactory, there being no return of the vomiting after the administration of the nitrite; the remaining three cases being only unsatisfactory in so far as they required a further dose or two of the remedy. His mode of administration is by inhalation, three drops of the drug being poured on a handkerchief, and held close to the patient's nose.

Arnica in Orchitis.—Mr H. G. Knaggs recommends for the cure of orchitis, first the constant application of a lotion of one part of tincture of arnica to six of water to the part; secondly, the application of an embrocation composed of one part of tincture of arnica to one or two parts of soap liniment, twice or thrice daily along the course of the spermatic cord; and, thirdly, the internal administration of seven-drop doses of tincture of arnica combined with two-and-a-half-drop doses of Fleming's tincture of aconite, together with acetate of ammonia, if there be febrile disturbance. This treatment usually cures in a fortnight or less. A careful watch should be kept lest any symptom of erysipelatoid inflammation should occur.—*Brit. Med. Journ.*, 17th July 1875.

During the past year, attention has been directed by several American and French physicians to the noxious properties which arnica occasionally exhibits when used as an external application. Dr C. Phillips, in his Materia Medica and Therapeutics, ascribes these evil consequences to the employment of an alcoholic, instead of an aqueous, solution; which latter contains neither arnicine nor the oil. He states that he has never seen inflammatory symptoms follow the application of a purely aqueous lotion to wounds or bruises.

Atropine and Morphia.—The following are some of the conclusions arrived at by Drs Mitchell, Keene, and Morehouse, of Philadelphia. Conia, atropia, and daturia, do not lessen pain when given subcutaneously. Morphia does so relieve pain, and is

more potent in certain forms of neuralgia the nearer it is applied to the seat of pain. Morphia scarcely lowers the pulse at all, while atropia lowers it a few beats within ten minutes, and raises it from 20 to 50 beats within an hour; the pulse then falls below the normal standard about the tenth hour, and finally regains the healthy rate within the twenty-four hours. Morphia cannot prevent atropia from thus influencing the pulse, and hence these alkaloids are not antagonistic as regards the circulation. During the change of pulse under atropia, the number of the respirations is hardly altered. Atropia and morphia are antagonistic as regards the eye, but the action of atropia lasts much longer. As regards the cerebral symptoms, atropia and morphia are antagonistic, but owing to the different rates at which they affect the system, it is difficult to obtain a perfect balance of influence. The dryness of the throat caused by atropia is not relieved by morphia, and the nausea induced by morphia is not prevented by atropia. Both agents cause dysuria in certain cases, and the dysuria occasioned by one is not relieved by the other. They seem to affect the bladder similarly. Atropia does not influence the power of morphia to diminish sensibility or to relieve pain.—*Pacific Medical and Surgical Journal.*

In the *Berliner Klinische Wochenschrift*, 23d August 1875, Dr Hedler records the following case:—A child, aged 15 months, drank about half of a bottle containing more than half a grain of atropia in solution. The case was remarkable on account of the fact that no important symptoms manifested themselves for four hours. Then, however, the rapidity of the pulse increased, urgent convulsions ensued, and the scarlatina-like rash covered the head and chest. The pupils were now much dilated. A sixth of a grain of morphia was ordered in four doses to be given at intervals of a quarter of an hour. This produced no effect, and two subcutaneous injections of 1-7th grain of morphia each were administered. After the second injection the spasms ceased; the child slept well until next day, and two days after there remained no bad symptom. Nothnagel will not allow that morphia is antidotal to atropia, but it seemed to act as if it was so in this instance.

In the *Indian Medical Gazette*, 1st July, G. Chunder Roy reports two cases of opium poisoning successfully treated by subcutaneous injections of atropine.

Dr Forcauld (*Mouvement Médical*, 22d May) extols the administration of injection of a mixture of morphia and atropia in the dyspnœa of phthisical patients. The following are his conclusions:—The mixed injection (equal parts of solution of hydrochlorate of morphia, 1–30, and solution of sulphate of atropia, 1–100) presents all the advantages of the injection of sulphate of atropia without its inconveniences. Six drops of the mixed injection give as good results as fifteen drops of solution of muriate of morphia. As after the employment of either the morphia or atropia alone, so after

the use of the mixed injection, there is a diminution in the number of respiratory movements, in the degree of temperature, and in the rapidity of the pulse.

Dr Curtis Smith, writing in the *Detroit Review of Medicine* for July, states that atropine is almost the only reliable respiratory stimulant with which he is acquainted. Under its influence the respirations, according to him, are increased from six to twelve per minute above the normal standard. The blood thus goes to the nerve-centres in increased quantity, and with increased purity and stimulating properties. Atropia diminishes abnormally increased secretions of mucous membranes, and has become one of our standard remedies in excessive diaphoresis. In certain cases of nervous debility characterized by sluggishness of the capillary circulation entailing partial congestion of the lungs, atropia is indicated as being well calculated to stimulate the nerve-centres which control the circulation and respiration. Atropia is of great value in arresting profuse alimentary discharges. As an adjunct to laxative pills, it renders their action more certain and thorough by stimulating the nerves supplying the muscular and mucous coats of the bowels. In cases of fæcal obstructions, it is a valuable agent, and may be given when the further use of cathartics is contraindicated, as, for instance, when the bowels have become inflamed.

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